BRIEF COMMUNICATIONS

TRAUMATIC AORTOPULMONARY COMMUNICATION: CLINICOPATHOLOGIC CORRELATION

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This report concerns a young man in whom traumatic aortopulmonary communication occurred that mimicked congenital aortopulmonary window. To our knowledge, this has never been reported in the literature. The precise preoperative diagnosis and the adequate surgical treatment may provide a good clinical experience.

A 32-year-old male patient had a stabbing injury over the left side of the upper chest 4 years ago. Emergency surgical repair of a cardiac rupture was done immediately at that time at another hospital. The patient led an independent daily life after hospital discharge. He was told that an intracardiac shunt might be necessary; however, he did not request this therapy.

He had progressive exercise intolerance and exertional dyspnea (Canadian cardiovascular functional class II to III) during the past year. In addition, he had fever and deterioration of functional performance during the past month. After he visited our clinic, we suggested he be admitted to the hospital with possible ruptured coronary sinuses of Valvasa with infective endocarditis. At hospital admission, he appeared chronically ill. The blood pressure was 120/50 mm Hg, pulse rate 84 beats/min, respiratory rate 18 breaths/min, and body temperature 37.8° C. A 0.5 × 2.5 cm^2 scar of the previous stabbing injury was found at the second intercostal space over the left parasternal border. A grade 4/6 to-and-fro murmur with a superficial thrill was detected at the aortic area. Mild bounding pulse was also noted. The white blood cell count was 13,000 cells/ml.

The electrocardiogram revealed normal sinus rhythm and left ventricular hypertrophy with diastolic overload pattern. The transthoracic echocardiogram showed a dilated left ventricle and right ventricle, an estimated left ventricular ejection fraction of 72%, rupture of the left coronary cusp of the aortic valve with severe aortic regurgitation, severe pulmonary regurgitation, possible vegetations over the left and noncoronary cusps of the aortic valve and left pulmonary cusp, and a left-to-right shunt across the aortopulmonary septum (Fig. 1). A transesophageal echocardiogram furthermore confirmed that the exact location of the left-to-right shunt was across the aortopulmonary septum and just distal to the pulmonary anulus (Fig. 2). The profiles of pressure tracings and oxygen saturation are shown in Table I. The ratio of pulmonic to systemic flow of the left-to-right shunt was estimated to be 2.8.

After intensive medical control of infective endocarditis, the patient underwent surgical intervention. The operative findings included severe adhesion of the aorta and the surrounding tissue, complete destruction of the left coronary cusp of the aortic valve and left pulmonary cusp, multiple vegetations and fibrogranulomatous tissue over the aforementioned cusps, and a 2 × 0.5 cm^2 fistula tract from the site near the left coronary orifice to the pulmonary trunk just distal to the anulus (Fig. 3, *A, B,* and *C*). Complete debridement, aortic valvular replacement with a No. 19 St. Jude Medical valve, and pulmonary valvular replacement with a No. 21 St. Jude Medical valve (St. Jude Medical, Inc., St. Paul, Minn.) were done. The pathologic findings of both valves revealed fibrinous coating with focal bacterial clumps, foamy histiocyte and multinucleated giant cell aggregation, mononuclear cell infiltration, degenerative mesenchymal cells, and neovascularization. The picture was compatible with the diagnosis of bacterial endocarditis over both aortic and pulmonary valves.

Traumatic cardiology is a special category that includes a broad spectrum of disease entities. The manifestations of cardiac trauma vary case by case and its management should also be individualized. In this report, we provide at least two clinical implications, as follows. First, adequate

Table I. *Pressure tracings and oxygen saturations*

Location	*Pressure (mm Hg)*	*Oxygen saturation (%)*
Right femoral artery (mean)	142/30 (75)	99.6
Left pulmonary artery wedge	11	99.0
Left pulmonary artery (mean)	55/10 (24)	74.8
Main pulmonary artery (mean)	36/8 (28)	78.0
Right ventricle	45/8	
Outflow tract		76.7
Apex		79.5
Inflow tract		67.8
Right atrium	6	
Low		58.4
Middle		59.4
High		52.4
Superior vena cava	6	
Low		53.5
High		58.0
Inferior vena cava	6	70.1

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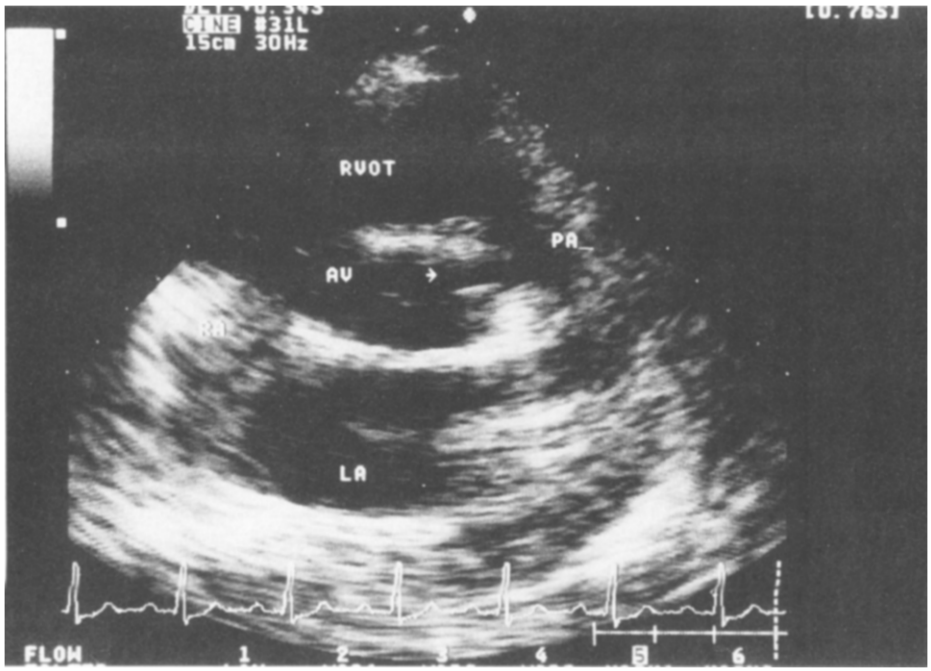

Fig. 1. Parasternal short-axis view with transthoracic echocardiography showed possible defect across aortopulmonary septum *(arrow). AV,* Aortic valves; *RVOT,* right ventricular outflow tract; *PA,* main pulmonary artery; *LA,* left atrium; *RA,* right atrium.

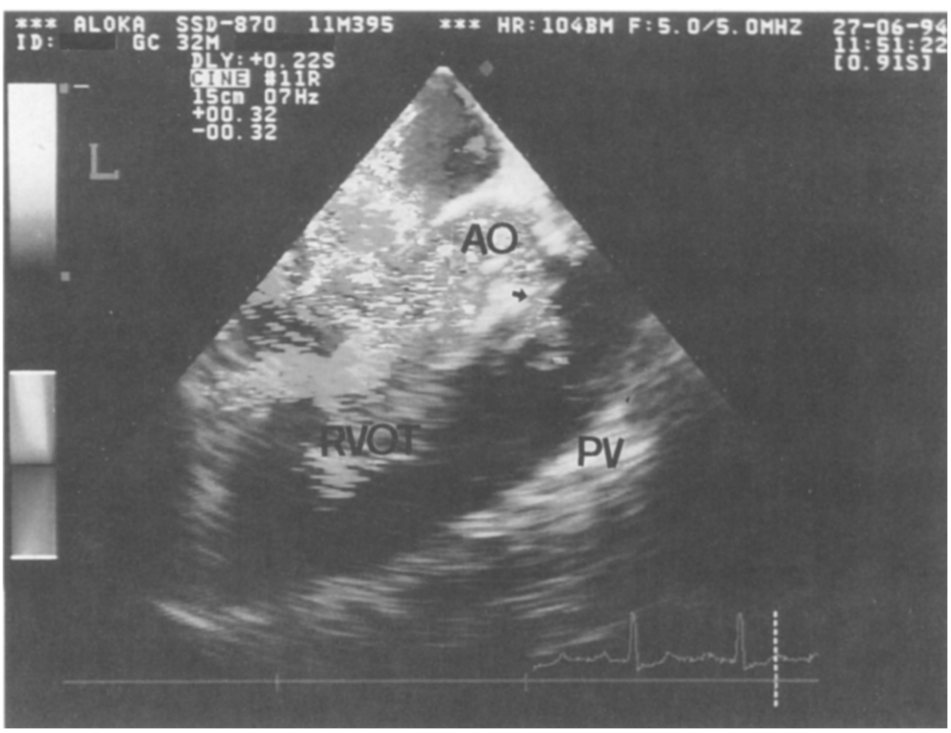

Fig. 2. Longitudinal section of right ventricular outflow tract *(RVOT)* by transesophageal echocardiography demonstrated that exact site of left-to-right shunt was just distal to pulmonary anulus *(arrow). PV,* Pulmonary valves; *AO,* aortic root.

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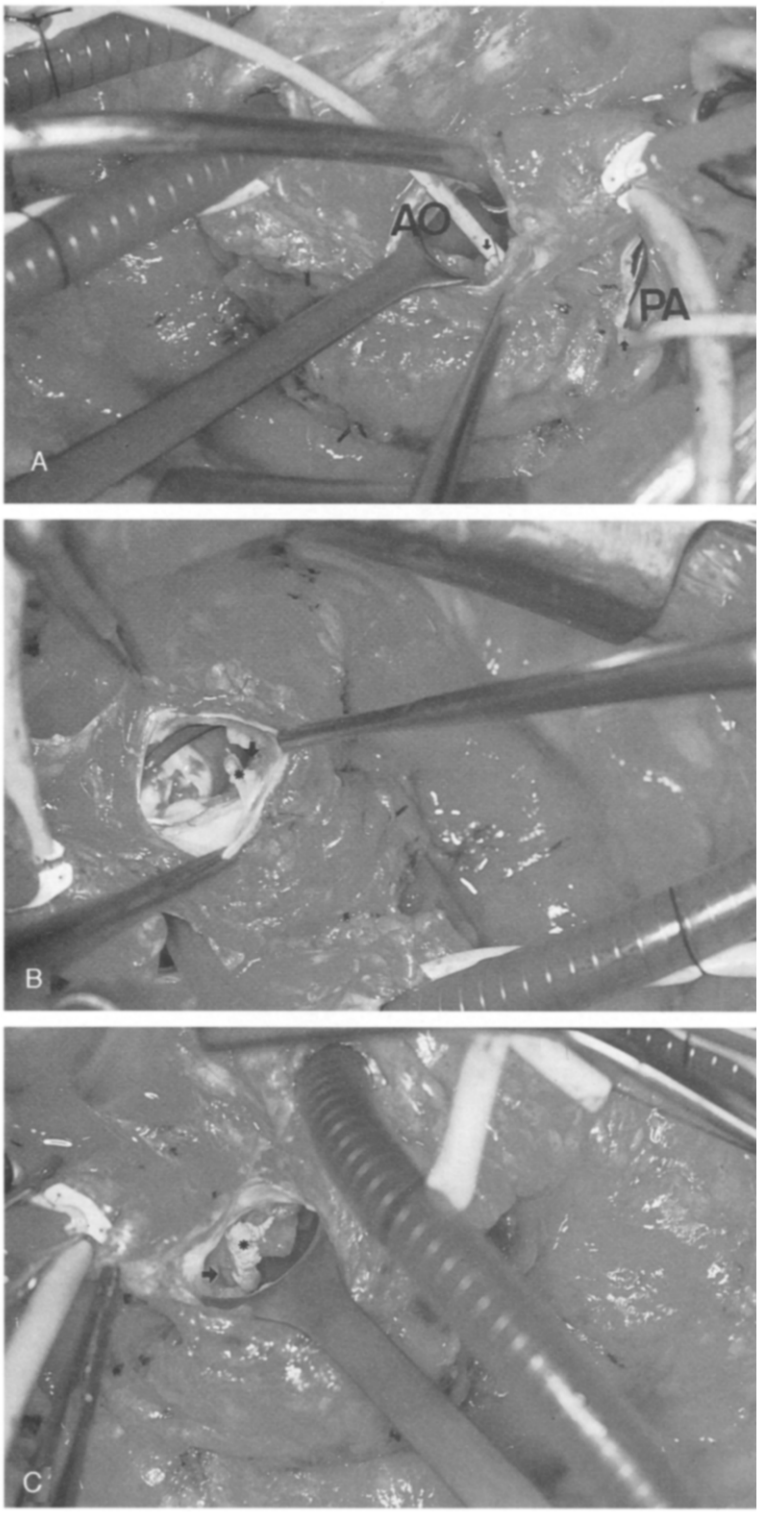

Fig. 3. A, Probe through aortopulmonary communication was shown during operation *(arrows). AO,* Aortic root; *PA,* pulmonary trunk. **B,** View of pulmonary trunk showed destruction of left pulmonary cusp with overlying vegetations *(asterisk)* and location of fistula tract *(arrow).* **C,** View of aortic root showed massive vegetations of left coronary cusp *(asterisk)* and location of fistula tract *(arrow).*

surgical intervention depends on correct preoperative diagnosis. In our case report, the clinical differential diagnoses included subaortic ventricular septum rupture combined with severe aortic regurgitation, ruptured coronary sinuses of Valsalva, and traumatic aortopulmonary communication. The methods of operation differ from each other in these circumstances.[1-3] Detailed preoperative evaluation may provide excellent surgical planning and thus reduce perioperative risks. Second, transesophageal echocardiography provides a new avenue of imaging of the heart and mediastinal contents because of the lack of chest wall interference and the use of high-frequency transducers with less beam dispersion and better resolution.[4] The close anatomic relationship of the esophagus and the aorta allows imaging of the aortic root, the arch, and great vessels.[4] The pathologic delineation of the structures around the aortopulmonary anulus can be therefore defined clearly by this noninvasive tool. In addition, transesophageal echocardiography may be superior to cardiac catheterization and angiography, as in our case. The latter sometimes cannot define exactly the location of intracardiac shunting because of the interference of a large regurgitant flow to the oxygen-saturated nearby chambers or because of unsatisfactory angulation in the performance of angiography.

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BRONCHOPLEURAL FISTULA AFTER PNEUMONECTOMY: REPAIR AND PREVENTION WITH A DEEPITHELIALIZED LATISSIMUS DORSI MYOCUTANEOUS ISLAND FLAP

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Breakdown of the suture line on the main bronchus after pneumonectomy is an infrequent but life-threatening condition. After management of the acute situation with drainage and antibiotics, surgical closure can be attempted.[1] The local and general conditions, however, are far from ideal for the healing of a new bronchus suture line. There is now ample evidence that successful healing is promoted by reinforcing the new suture line with well vascularized tissue.[2-5] We recently obtained favorable results with a deepithelialized latissimus dorsi (LD) myocutaneous island flap, which has the advantage of adding the tensile strength of the dermis to the vascularization of the LD muscle.

Case report. A 74-year-old man underwent a right pneumonectomy because of squamous cell carcinoma of the upper lobe extending into the main bronchus (T2 N0 M0). The main bronchus was closed with staples (Auto Suture; United States Surgical Corp., Norwalk, Conn.). Postoperative recovery was uneventful, and the patient left the hospital in good condition after 12 days. At postoperative day 24, however, he returned because of high fever and massively productive cough. Bronchoscopy revealed a large defect in a short right main bronchus. Acute management consisted of tube drainage of the right pleural cavity and antibiotic therapy. After 5 days, an open-window thoracostomy was performed. The pleural cavity was packed with gauzes, which were changed daily. Under this regimen, the infection subsided quickly and the general condition of the patient improved. The pulmonary reserve remained marginal, however, because of preexisting emphysema. For closure of the fistula omentum, transposition was considered but rejected because we were worried about the effect of a combined thoracotomy and laparotomy on the function of the remaining lung. Instead, we decided to use the deepithelialized LD myocutaneous flap to reinforce the planned new suture line. The operation was carried out 28 days after the open-window thoracostomy.

Operative technique. The operation was carried out with the patient under general anesthesia in the left lateral position, with selective intubation of the left main bronchus. Before operation, the LD muscle had been outlined on the skin and a skin island of 8 × 12 cm had been marked, taking into account the transection of

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